Bat activity after prescribed fires at Mammoth Cave National Park

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Introduction

- White-Nose Syndrome (WNS) has caused declines for many of Kentucky's bats
- Mammoth Cave National Park (MCNP)
  - WNS discovered January of 2013
  - Prescribed fire is principle management tool

Objective

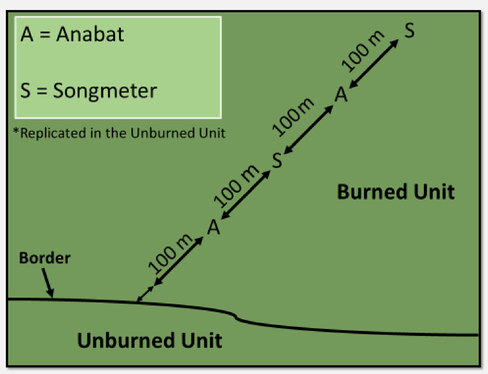
Determine if prescribed fires impact foraging by forest-dwelling bats

Hypothesis

Bat activity will be greater in areas with prescribed burns

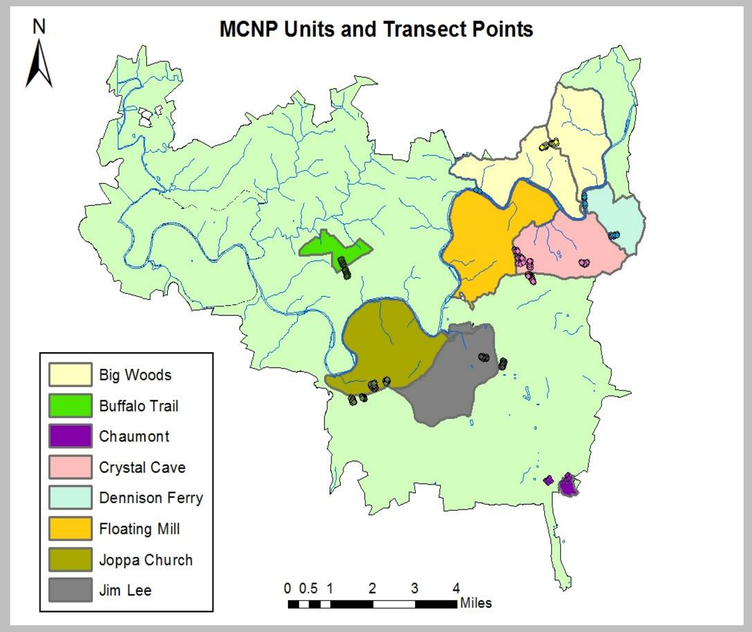
Methods

- Acoustic surveys
  - Acoustic detectors: Anabat II & Songmeter 3
  - Deployed ≥ 3 consecutive nights per survey
  - Bi – weekly basis
  - May - September 2015
- Recordings classified into a phonic group (low, mid, Myotis frequencies) using Bat Call ID v.2.7c
  - ≥ 5 pulses
  - Identified at ≥ 70% confidence



Generalized layout of transects used for bat activity surveys

Results

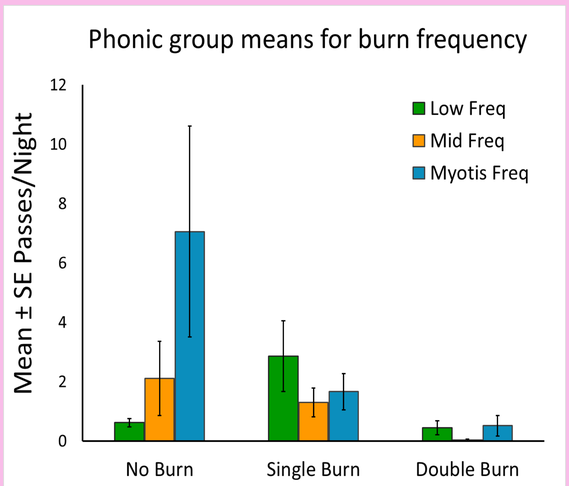


Map of MCNP noting all points sampled in 2015 (n = 48)

Figure 2. Effect of burn frequency on various phonic groups of bat activity.

Myotis activity
- Greatest in no burn areas

Low activity
- Greatest in single burn areas



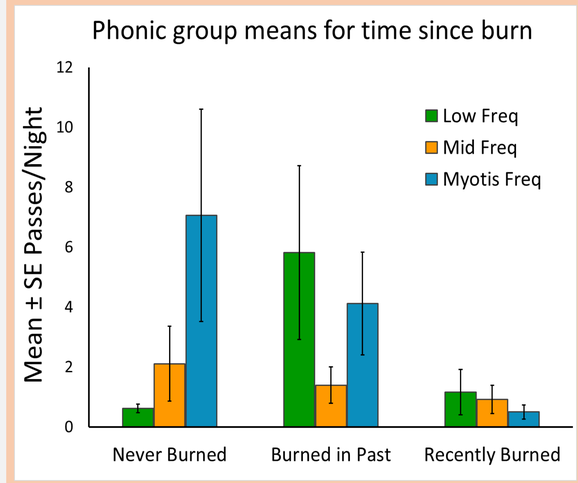


Figure 1. Effect of time since burn on various phonic groups of bat activity.

Myotis activity
- Greatest in no burn areas

Low activity
- Greatest in past burn areas

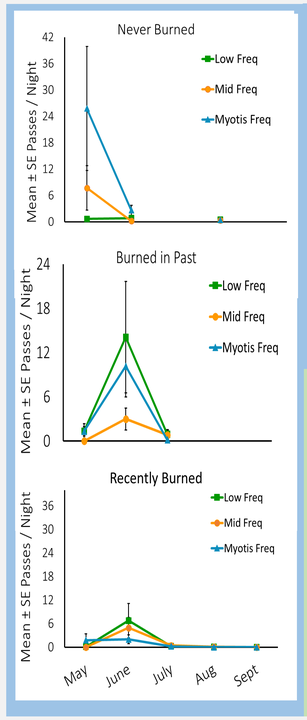


Figure 3. Monthly variation in bat activity relative to time since burn. Greatest bat activity in May and June

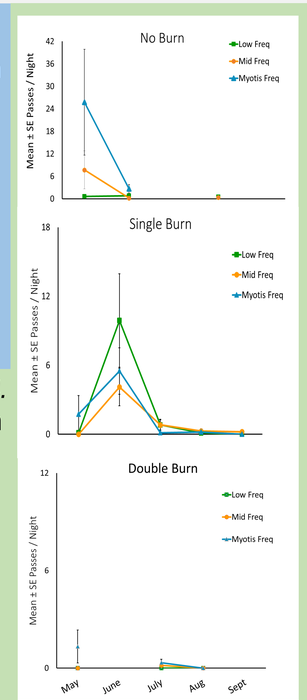


Figure 4. Monthly variation in bat activity relative to burn frequency. Greatest bat activity in May and June

Acknowledgements

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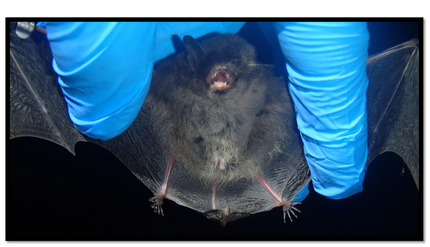

Myotis species are severely impacted by WNS

Discussion

- Bat activity is greatest in areas that have not been burned
- Increasing the number of burns decreases bat activity
- More research is being conducted on the effect of prescribed fire before and after the arrival of WNS